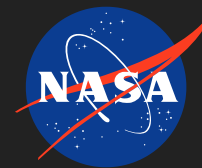


Miniaturized Scrubber System for Long Duration Exploration and Habitation Applications (MSS)

Active Technology Project (2015 - 2022)



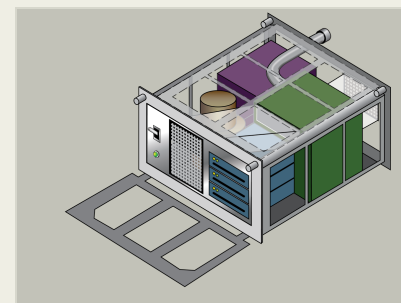
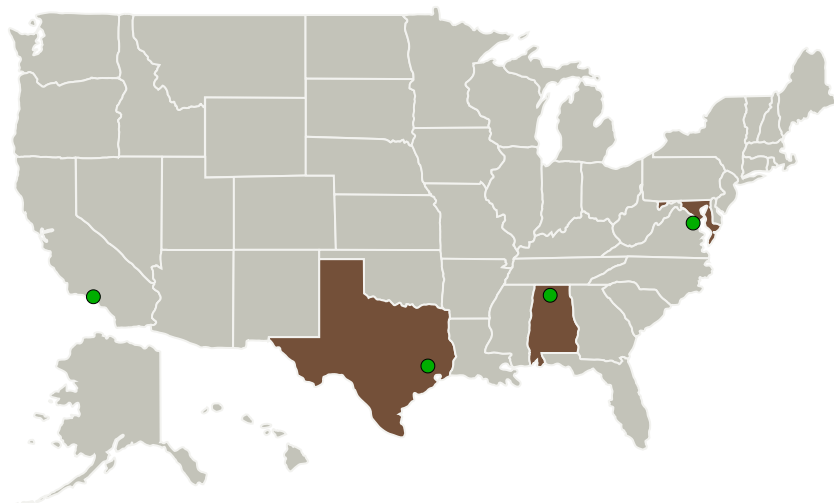
Project Introduction

The aim of this effort is to develop a miniaturized carbon dioxide scrubber system based on proprietary Dynetics technology to provide atmosphere revitalization. The system targets operation with low to no consumable requirements, minimal maintenance, and capable of integration with existing oxygen recovery processes. Technology development, endurance testing, and advanced modeling will be performed to inform scaled system design. This activity is a NextSTEP partnership between NASA and Dynetics.

Anticipated Benefits

Perform highly reliable, continuous carbon dioxide scrubbing in spacecraft while conserving atmospheric water. Current systems require consumable resupply and substantial maintenance, consume more power and occupy more space than desired. The MSS project targets development of a miniaturized system designed for infrequent maintenance that requires minimal astronaut interaction. System goals include minimized consumables, size, weight, and power while maximizing carbon dioxide removal.

Primary U.S. Work Locations and Key Partners



This image shows a notional concept of the DyneticsMiniaturizedScrubber. System.

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Organizations Performing Work	Role	Type	Location
Dynetics, Inc.	Lead Organization	Industry	Huntsville, Alabama
● Jet Propulsion Laboratory(JPL)	Supporting Organization	NASA Center	Pasadena, California
● Johnson Space Center(JSC)	Supporting Organization	NASA Center	Houston, Texas
Kitty Hawk	Supporting Organization	Industry	
● Marshall Space Flight Center(MSFC)	Supporting Organization	NASA Center	Huntsville, Alabama
● NASA Headquarters(HQ)	Supporting Organization	NASA Center	Washington, District of Columbia
The University of Alabama	Supporting Organization	Academia	Tuscaloosa, Alabama

Co-Funding Partners	Type	Location
Dynetics, Inc.	Industry	Huntsville, Alabama

Primary U.S. Work Locations	
Alabama	District of Columbia
Maryland	Texas

Organizational Responsibility

Responsible Mission Directorate:

Exploration Systems Development Mission Directorate (ESDMD)

Lead Organization:

Dynetics, Inc.

Responsible Program:

Exploration Capabilities

Project Management

Program Director:

Christopher L Moore

Project Managers:

Marlon R Cox
Morgan B Abney
Jesse Jones

Principal Investigators:

Jesse Jones
Ryan Hooper

Co-Investigator:

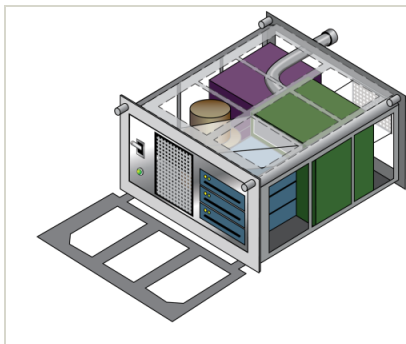
Eric J Tuck

Miniaturized Scrubber System for Long Duration Exploration and Habitation Applications (MSS)

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Images



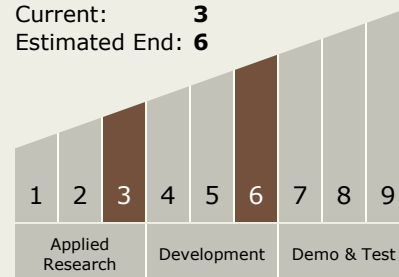
Dynetics Miniaturized Scrubber System Concept

This image shows a notional concept of the DyneticsMiniaturizedScrubber System.

(<https://techport.nasa.gov/image/41145>)

Technology Maturity (TRL)

Start: **3**
Current: **3**
Estimated End: **6**



Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
 - └ TX06.1 Environmental Control & Life Support Systems (ECLSS) and Habitation Systems
 - └ TX06.1.1 Atmosphere Revitalization

Target Destinations

The Moon, Mars

Supported Mission Type

Planned Mission (Pull)